

Design and Development of Roof Mounted Universal Luggage Carrier for Hatchback Passenger Cars



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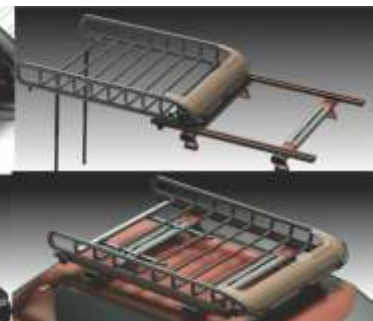
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Abstract:

Indian Automotive Industry is one of the largest and fastest growing in the world and thus cars have indeed become a basic need rather than luxury. Hatchback cars (B-segment cars) have found great importance especially among middle & upper middle class people due to the fact that they offer good value for money, easy of handle in traffic and low maintenance. However such cars do not have a large boot space. This project aims to bring out a better roof mounted luggage carrying solution for hatchbacks by understanding the issues with conventional bar type luggage carriers & capturing the needs of all stakeholders.

Market survey showed there are very few luggage carriers available in Indian market which suits hatchback cars. User and Ethnography study revealed issues with current carriers like low quality, bad aesthetics, safety, reliability, loading and unloading problems, no universal & convertible type design etc. which ought to be addressed through this project. There was indeed a gap in the market for a more practical and reliable roof mounted carrier for hatchback cars. QFD and PDS were arrived by considering all the key elements from the research. 5 concepts were generated out of which the final design was chosen based on the Pugh selection method.

Final design is a convertible luggage carrier which is an open as well as enclosed type, wind deflector ensures aerodynamic design, the carrier can slide back ensuring users to load and unload their luggage with ease, no complex tooling in design ensured the cost is kept minimum, design of the base structure & foot packs are universal type which suits all hatchback cars, aluminium alloy bars ensures the quality issues are addressed, a weather-proof covering, tie-down hooks are provided for safety of luggage. A 1:1 prototype was built to evaluate fit and form of the final design.



Concepts of roof mounted luggage carrier

Salient features of final concept



Final concept of roof mounted luggage carrier

Prototype of the final concept